DOCUMENT RESUME

ED 090 001 SE 017 554

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TITLE	Basic Math I, Package 01-02, Addition and Subtraction of Whole Numbers.
INSTITUTION	Arnold Public Schools, Nebr.
SPONS AGENCY	Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C.
PUB DATE	72
NOTE	59p.; For related documents, see SE 017 553 and SE 017 555 through 575
EDRS PRICE	MF-$0.75 HC-$3.15 PLUS POSTAGE
DESCRIPTORS	Addition; Algorithms; Grade 9; Individualized Instruction; *Instructional Materials; *Number Concepts; Objectives; *Secondary School Mathematics; Subtraction; *Teaching Guides; *Tests; Whole Numbers
IDENTIFIERS	Elementary Secondary Education Act Title III; ESEA Title III; Estimation; *General Mathematics

ABSTRACT

This teacher guide is part of the materials prepared for an individualized program for ninth-grade algebra and basic mathematics students. Materials written for the program are to be used with audiovisual lessons recorded on tape cassettes. For an evaluation of the program, see ED 086 545. In this guide, the teacher is provided with objectives for each topic area and guided to materials written for a given topic. Three short criterion tests are included for each topic covered. The work in this package provides practice with addition and subtraction of whole numbers, reviews the commutative and associative properties for addition and provides work on estimation of solutions to problems. This work was prepared under an ESEA Title III contract. (JP)

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ED 090001
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BASIC MATH I

Package # 01-02

ADDITION AND SUBTRACTION OF WHOLE NUMBERS

Prepared By

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Under a Grant From
ESEA, Title III
Nebraska State Department of Education
Jack Baillie, Administrator
to
Arnold Public Schools, Arnold, Nebraska

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SE 017 554

ADDITION AND SUBTRACTION OF WHOLE NUMBERS

Addition and subtraction are two of the most useful and basic mathematical ideas. In our modern world we could hardly take care of ourselves without them. Adding bills, making change, and checking accounts are things most people have to do. In this package you will learn to understand addition and subtraction better and you will get valuable practice in using addition and subtraction.

GOAL: To gain understandings which will lead to greater accuracy in addition and subtraction of whole numbers.

OBJECTIVES:

1. Given any two of the numbers, (they may be equal) 0,1,2,3,4,5,6,7,8,9, add them.
2. Given two whole numbers, add them. (No renaming necessary.)
3. Given a sentence, tell whether it illustrates the commutative or associative law.
4. Given two numbers, add them, using renaming if necessary.
5. Given more than two numbers, add them from the top or bottom.

OBJECTIVES: (Continued)

6. Given an addition problem, estimate the answer by rounding to the nearest ten, hundred, or thousand.

7. Given equations like $3 + n = 9$, $x + 7 = 8$, $81 + 43 = y$; write their solution.

8. Given a subtraction problem like $5 - 3$, $13 - 8$, and so on, find the difference.

9. Given two whole numbers, find their difference, no renaming.

10. Given two whole numbers, find their difference, renaming, if necessary.

11. Given a verbal problem involving the use of addition or subtraction of whole numbers translate it into a number sentence and solve it.

12. Given a subtraction problem in which zeros occur as digits, find the difference.

I. U. 01-02-01

The Set of Whole Numbers

OBJECTIVES:

1. Given a number line, identify the set of whole numbers and pair them with points on the number line.

2. Given two different whole numbers, identify which is less (or greater).

3. Given any two (they may be equal) of the numbers 0,1,2,3,4,5,6,7,8,9, add them.

ACTIVITIES:

1. Study page 21 AAMA and do margin exercises 1,2, and 3 (objective 1)

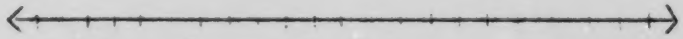
2. Study "order" on pages 21 and 22 and do margin exercises 4,5,6,& 7 (objective 2).

3. Study "Basic Addition" pages 22 and 23, and do margin exercises 8-13 (objective 3)

4. Do exercise set 1, page 47. If you miss any of the problems from 15-72, memorize the correct answer for that combination (objective 1,2,& 3)

Criterion Test 01-02-01-01

1. Identify the set of whole numbers by placing the first 10 numbers on a number line.



2. Identify which number is less (or greater) by the use of the symbols > and <.

   (A) 3___5 (B) 49___30 (C) 7___17

3. Find the sum.

(1) 3 + 4	(15) 4 + 2	(29) 7 + 9	(43) 9 + 0
(2) 3 + 1	(16) 5 + 4	(30) 6 + 8	(44) 8 + 8
(3) 2 + 6	(17) 3 + 2	(31) 5 + 5	(45) 4 + 5
(4) 7 + 4	(18) 1 + 1	(32) 5 + 4	(46) 3 + 3
(5) 3 + 6	(19) 8 + 7	(33) 5 + 3	(47) 2 + 7
(6) 8 + 3	(20) 9 + 2	(34) 2 + 2	(48) 2 + 1
(7) 0 + 0	(21) 3 + 0	(35) 1 + 4	(49) 1 + 5
(8) 8 + 9	(22) 5 + 8	(36) 5 + 2	(50) 2 + 8
(9) 9 + 5	(23) 6 + 5	(37) 3 + 9	(51) 7 + 1
(10) 5 + 7	(24) 6 + 7	(38) 4 + 8	(52) 4 + 4
(11) 0 + 2	(25) 6 + 9	(39) 5 + 0	(53) 1 + 0
(12) 4 + 9	(26) 0 + 6	(40) 6 + 6	(54) 9 + 1
(13) 3 + 1	(27) 7 + 0	(41) 7 + 7	(55) 0 + 4
(14) 3 + 7	(28) 9 + 9	(42) 0 + 8	

Criterion Test 01-02-01-02

1. Repeat question 1, Test 01-02-01-01

2. Identify which number is less (or greater) by proper use of the symbols > and <.

   (A) 17___28 (B) 9___7 (C) 15___17
   (D) 49___39

3. Repeat question 3, test 01-02-01-01

Criterion Test 01-02-01-03

1. Complete the following number line of whole numbers and circle the points 5,7,9,& 11 on it.

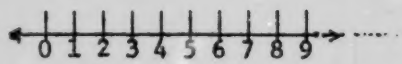
2. Identify the larger number by proper use of the symbols > and <.

   (A) 25___50 (B) 75___50

3. Repeat question 3, test 01-02-01-01

Answers to Criterion Tests

Test 01-02-01-01

1. 

2. (A) 3 < 5 (B) 49 > 30 (C) 7 < 17

3.

(1) 7	(15) 6	(29) 16	(43) 9
(2) 4	(16) 9	(30) 14	(44) 16
(3) 8	(17) 5	(31) 10	(45) 9
(4) 11	(18) 2	(32) 9	(46) 6
(5) 9	(19) 15	(33) 8	(47) 9
(6) 11	(20) 11	(34) 4	(48) 3
(7) 0	(21) 3	(35) 5	(49) 6
(8) 17	(22) 13	(36) 7	(50) 10
(9) 14	(23) 11	(37) 12	(51) 8
(10) 12	(24) 13	(38) 12	(52) 8
(11) 2	(25) 15	(39) 5	(53) 1
(12) 13	(26) 6	(40) 12	(54) 10
(13) 9	(27) 7	(41) 14	(55) 4
(14) 10	(28) 18	(42) 8	

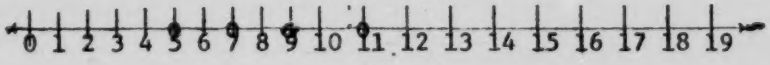
Test 01-02-01-02

1. Same as answer 1 on test 01-02-01-01

2. (A) 17<28 (B) 9>7 (C) 15<17 (D) 49>39

3. Same as answer 3 on test 01-02-01-01

Test 01-02-01-03

1. 

2. (A) 25<50 (B) 75>50

3. Same as answer 3 on test 01-02-01-01

I. U. # 01-02-02

Addition
(No Renaming)

You will need to recall the addition combinations from I. U. # 01-02-01. You cannot learn to add larger numbers until the basic combinations are known.

OBJECTIVES:

1. Given two whole numbers, write their sum when no renaming is necessary.

ACTIVITIES:

1. Study page 24 AAMA and do margin exercises 14-17 (objective 1).

2. Work exercise set 2 page 49-50, (objective 1). Answers to margin exercises are on page 389. Answers to exercise set 2 are on page 391.

Criterion Test 01-02-02-01

Add:

1. 5872 + 3125

2. 7216 + 6543

3. 1492 + 4407

4. 1234 + 4321

5. 3217 + 4532

Criterion Test 01-02-02-02

Add:

1. 5280 + 4312

2. 7132 + 1234

3. 4221 + 1234

4. 1777 + 3210

5. 1276 + 4321

Criterion Test 01-02-02-03

Add:

1. 9876 + 0123

2. 8765 + 1234

3. 7654 + 2345

4. 6543 + 3456

5. 5432 + 4567

Answers to Criterion Tests

Test 01-02-02-01

1. 8997 2. 13759 3. 5899 4. 5555 5. 7749

Test 01-02-02-02

1. 9592 2. 8366 3. 5455 4. 4987 5. 5597

Test 01-02-02-03

1. 9999 2. 9999 3. 9999 4. 9999 5. 9999

I. U. # 01-02-03.

The Commutative and Associative Laws of Addition

You will need to recall that:

We use letters like a, and b, to stand for numbers. Remember that we can make a better general statement about numbers by letting letters like a and b stand for any number than by using specific numerals like 2 or 3.

OBJECTIVES:

1. Given an addition problem, find the sum and use the commutative law to check it by adding in the opposite order.

2. Given a sentence like $3 + (6 + 2) = (3 + ___) + 2$ use the associative law to complete it.

3. Given a sentence, tell whether it illustrates the commutative or associative law.

ACTIVITIES:

1. Study page 25 AMW and do margin exercises 18 through 21. (Objective 1)

2. Study page 26 and do margin exercises 22 through 26. (Objective 2)

3. Write Exercise Set III, pages 51 and 52 (Objective 3)

Criterion Test 01-02-03-01

1. Add and check, show all work:

(A) 7622 + 5321

(B) 5134 + 4321

(C) 1162 + 3210

(D) 1945 + 8044

2. Complete the following sentences.

(A) (5 + 4) + 9 = 5 + (4 + ___)

(B) (7 + 2) + 1 = 7 + (2 + ___)

(C) 6 + (3 + 2) = (6 + 3) + ___)

(D) 7 + (9 + 8) = (7 + 9) + ___)

3. What law of addition, commutative or associative, is illustrated by each sentence.

(A) 7000 + 76 = 76 + 7000

(B) 8000 + (1000 + 600) = (8000 + 1000) + 600

(C) 0 + 89 = 89 + 0

(D) 4 + (2 + 3) = (4 + 2) + 3

Criterion Test 01-02-03-02

1. Add and check, show all work

(A)	(B)	(C)	(D)
2753	9216	1772	2121
3123	3123	3123	3123

2. Complete the following sentences.

(A) $(3 + 2) + 5 = 3 + (___ + 5)$

(B) $(7 + 9) + 6 = 7 + (9 + ___)$

(C) $4 + (3 + 2) = (4 + ___) + 2$

(D) $6 + (7 + 8) = (___ + 7) + 8$

3. What law of addition, commutative or associative, is illustrated by each sentence?

(A) $7 + 6 = 6 + 7$

(B) $7 + (6 + 5) = (7 + 6) + 5$

(C) $8 + (3 + 2) = (8 + 3) + 2$

(D) $2 + 3 = 3 + 2$

Criterion Test 01-02-03-03

1. Add and check, show all work.

(A) $\begin{array}{r} 7265 \\ \underline{7632} \end{array}$ (B) $\begin{array}{r} 7132 \\ \underline{7632} \end{array}$ (C) $\begin{array}{r} 1234 \\ \underline{7632} \end{array}$ (D) $\begin{array}{r} 5678 \\ \underline{7321} \end{array}$

2. Complete the following sentences.

(A) $(5 + 4) + 3 + 2 = 5 + (4 + ___) + 2$

(B) $5 + (4 + 3) + 2 = 5 + 4 + (3 + ___)$

(C) $5 + 4 + (3 + 2) = (5 + ___) + 3 + 2$

(D) $(5 + 4 + 3) + 2 = 5 + ___ + (3 + 2)$

3. What law of addition, commutative or associative, is illustrated by each sentence?

(A) $(1 + 2) + 3 = 1 + (2 + 3)$

(B) $5 + 6 = 6 + 5$

(C) $7 + (6 + 9) = (7 + 6) + 9$

(D) $7 + 11 = 11 + 7$

Answers to Criterion Tests

Test 01-02-03-01

1. (A) $\begin{array}{r} 7622 \\ 5321 \\ \hline 12943 \end{array}$ $\begin{array}{r} 5321 \\ 7622 \\ \hline 12943 \end{array}$ (B) $\begin{array}{r} 5134 \\ 4321 \\ \hline 9455 \end{array}$ $\begin{array}{r} 4321 \\ 5134 \\ \hline 9455 \end{array}$

(C) $\begin{array}{r} 1162 \\ 3210 \\ \hline 4372 \end{array}$ $\begin{array}{r} 3210 \\ 1162 \\ \hline 4372 \end{array}$ (D) $\begin{array}{r} 1945 \\ 8044 \\ \hline 9989 \end{array}$ $\begin{array}{r} 8044 \\ 1945 \\ \hline 9989 \end{array}$

2. (A) $(5 + 4) + 9 = 5 + (4 + \underline{9})$

(B) $(7 + 2) + 1 = 7 + (2 + \underline{1})$

(C) $6 + (3 + 2) = (6 + 3) + \underline{2}$

(D) $7 + (9 + 8) = (7 + 9) + \underline{8}$

3. (A) Commutative

(B) Associative

(C) Commutative

(D) Associative

Answers to Criterion Tests

Test 01-02-03-02

1. (A)
$$\begin{array}{r} 2753 \\ 3123 \\ \hline 5876 \end{array} \qquad \begin{array}{r} 3123 \\ 2753 \\ \hline 5876 \end{array}$$

(B)
$$\begin{array}{r} 9216 \\ 3123 \\ \hline 12339 \end{array} \qquad \begin{array}{r} 3123 \\ 9216 \\ \hline 12339 \end{array}$$

(C)
$$\begin{array}{r} 1772 \\ 3123 \\ \hline 4895 \end{array} \qquad \begin{array}{r} 3123 \\ 1772 \\ \hline 4895 \end{array}$$

(D)
$$\begin{array}{r} 2121 \\ 3123 \\ \hline 5244 \end{array} \qquad \begin{array}{r} 3123 \\ 2121 \\ \hline 5244 \end{array}$$

2. (A) $(3 + 2) + 5 = 3 + (\underline{2} + 5)$

(B) $(7 + 9) + 6 = 7 + (9 + \underline{6})$

(C) $4 + (3 + 2) = (4 + \underline{3}) + 2$

(D) $6 + (7 + 8) = (\underline{6} + 7) + 8$

3. (A) Commutative

(B) Associative

(C) Associative

(D) Commutative

Answers to Criterion Tests

Test 01-02-03-03

1. (A) $\begin{array}{r} 7265 \\ 7632 \\ \hline 14897 \end{array}$ $\begin{array}{r} 7632 \\ 7265 \\ \hline 14897 \end{array}$ (B) $\begin{array}{r} 7132 \\ 7632 \\ \hline 14764 \end{array}$ $\begin{array}{r} 7632 \\ 7132 \\ \hline 14764 \end{array}$

(C) $\begin{array}{r} 1234 \\ 7632 \\ \hline 8866 \end{array}$ $\begin{array}{r} 7632 \\ 1234 \\ \hline 8866 \end{array}$ (D) $\begin{array}{r} 5678 \\ 7321 \\ \hline 12999 \end{array}$ $\begin{array}{r} 7321 \\ 5678 \\ \hline 12999 \end{array}$

2. (A) $(5 + 4) + 3 + 2 = 5 + (4 + \underline{3}) + 2$

(B) $5 + (4 + 3) + 2 = 5 + 4 + (3 + \underline{2})$

(C) $5 + 4 + (3 + 2) = (5 + \underline{4}) + 3 + 2$

(D) $(5 + 4 + 3) + 2 = 5 + \underline{4} + (3 + 2)$

3. (A) Associative

(B) Commutative

(C) Associative

(D) Commutative

I. U. # 01-02-04

Addition with Renaming

OBJECTIVES:

1. Given two numbers, rename them if necessary and write their sum.

ACTIVITIES:

1. Study pages 27, 28, AAMA and do margin exercises on those pages (Objective 1).

2. Write exercise set 4, pages 53, 54. (Objective 1)

The answers to the margin exercises are on page 390.
The answers to exercise set 4 are on page 391.

Criterion Test 01-02-04-01

1.	2.	3.	4.	5.
4825	3597	1492	5250	9876
7162	6275	5450	1125	6789

Criterion Test 01-02-04-02

1.	2.	3.	4.	5.
9687	4679	4778	5592	5678
7896	7495	9656	9877	9876

Criterion Test 01-02-04-03

1.	2.	3.	4.	5.
6789	5678	4567	3456	2345
1234	2345	3456	4567	5678

Answers to Criterion Tests

Test 01-02-04-01

1. 11987 2. 9872 3. 6942 4. 6375 5. 16665

Test 01-02-04-02

1. 17583 2. 12174 3. 14434 4. 15469 5. 15554

Test 01-02-04-03

1. 1. 8023 2. 8023 3. 8023 4. 8023 5. 8023

I. U. # 01-02-05

Column Addition

You will need to recall:

The commutative law of addition tells us that the order in which whole numbers are added does not affect the sum.

OBJECTIVES:

1. Given a column of numbers to be added, write their sum and check it by adding in the opposite direction.

2. Given a column of numbers, write their sum by finding pairs of numbers whose sum is 10 or a multiple of 10.

3. Given a number, write a palindrome number related to it.

ACTIVITIES:

1. Study page 29 AAMA and do margin exercises 34 and 35. (Objective 1)

2. Study page 29 and do margin exercises 36 and 37. (Objective 2)

3. Study page 30 and do Queries (A) and (B) in the margin. (Objective 3)

4. Write exercise Set 5, pages 55 - 56. (Objectives 1, 2)

Criterion Test 01-02-05-01

1. Add from the top. Then check by adding from the bottom.

(A)	(B)	(C)	(D)
5	6	7	5
7	8	9	9
9	7	6	7
3	4	8	8

2. Add: look for pairs of numbers whose sum is ten or a multiple of 10.

(A)	(B)	(C)	(D)
6	5	7	15
3	4	9	24
4	7	13	5
7	15	5	6
			7

3. Find the palindrome number related to 251.

Criterion Test 01-02-05-02

1. Add: look for pairs of numbers whose sum is 10 or a multiple of 10.

(A)	(B)	(C)	(D)
9	8	13	21
5	7	16	7
6	4	7	9
11	2	4	13
4	3	4	8

2. Add from the top. Then check by adding from the bottom.

(A)	(B)	(C)	(D)
5	8	6	4
7	4	9	3
9	9	7	9
8	7	8	8

3. Find the palindrome number related to 326.

Criterion Test 01-02-05-03

1. Add from the top, then check by adding from the bottom.

(A)	(B)	(C)	(D)
5	6	7	7
7	2	4	8
9	5	9	6
3	8	8	4

2. Add: look for pairs of numbers whose sum is 10 or a multiple of 10.

(A)	(B)	(C)	(D)
9	13	8	21
7	14	7	7
1	7	2	19
3	6	4	6
		3	4

#. Find the palindrome number related to 567.

Criterion Test Answers

Test 01-02-05-01

1. (A) 24 (B) 25 (C) 30 (D) 29
2. (A) 20 (B) 31 (C) 34 (D) 57
3. 707

Test 01-02-05-02

1. (A) 35 (B) 24 (C) 44 (D) 58
2. (A) 29 (B) 28 (C) 30 (D) 24
3. 949

Test 01-02-05-03

1. (A) 24 (B) 21 (C) 28 (D) 25
2. (A) 20 (B) 40 (C) 24 (D) 57
3. 3663

I. U. # 01-02-06

Rounding and Estimating

You will need to recall:

What is meant by each digit in a standard numeral. For instance, in the numeral 528 the digit 5 means "five hundreds", the digit 2 means "two tens", the digit 8 means "eight ones".

OBJECTIVES:

1. Given a number, round it to the nearest ten, hundred, thousand, and so on.

2. Given an addition problem, estimate the answer by rounding to the nearest ten, hundred, or thousand.

ACTIVITIES:

1. Study page 31 - 32, AAMA, and do margin exercises 39 through 65. (Objective 1)

2. Study pages 32 - 33, and do margin exercises 66 through 68. (Objective 2)

3. Write Exercise set 6, pages 57 - 58. (Objectives 1, 2)

Criterion Test 01-02-06-01

1. Round to the nearest ten.

   (A) 8274 (B) 9324 (C) 1432

2. Round to the nearest hundred.

   (A) 8274 (B) 9324 (C) 2849

3. Round to the nearest thousand.

   (A) 8732 (B) 9324 (C) 2849

4. (A) Estimate the sum by rounding to the nearest ten.

   1492
   1763
   1945

   (B) Estimate the sum by rounding to the nearest hundred.

   5280
   1765
   9876

   (C) Estimate the sum by rounding to the nearest thousand.

   7980
   1235
   5498

Criterion Test 01-02-06-02

1. Round the following numbers to the nearest ten, hundred, and thousand.

   (A) 5280 (B) 1492 (C) 9999

2. Estimate the sum of the following numbers to the nearest ten, hundred, and thousand.

   (A) 1492
   1972
   3549
   5280

Criterion Test 01-02-06-03

1. Round the following numbers to the nearest ten, hundred, and thousand.

   (A) 1928 (B) 8291 (C) 8769

2. Estimate the sum of the following numbers to the nearest ten, hundred, and thousand.

   (A) 4321
   9876
   1287
   6543

Answers to Criterion Tests

Test 01-02-06-01

1. (A) 8270 (B) 9320 (C) 1430
2. (A) 8300 (B) 9300 (C) 2800
3. (A) 9000 (B) 9000 (C) 3000
4. (A) 5200 (B) 17000 (C) 14000

Test 01-02-06-02

1. (A) 5280; 5300· 5000

   (B) 1490· 1500; 1000

   (C) 10000; 10000 10000

2. (A) 12290· 12300· 12000

Test 01-02-06-03

1. (A) 1930; 1900; 2000

   (B) 8290; 8300· 8000

   (C) 8770; 8800; 9000

2. (A) 22030; 22000· 22000

I. U. # 01-02-07

Solving Equations

You will need to recall

1. That we can let letters such as n stand for numbers such as 2, 5, or <u>any</u> number.

2. That in an equation we have two expressions for the same number separated by an equal sign. For instance, $2 + 2 = 4$ is an equation. $5 = 3 + 2$ is an equation. $2 + n = 4$ is an equation <u>if</u> $n = 2$.

OBJECTIVES

1. Given an equation such as $3 + n = 9$, or $x + 7 = 8$, or $31 + 43 = y$, write its solution.

ACTIVITIES

1. Study pages 34 - 35, AAMA, and do margin exercises 69 through 80. (Objective 1)

2. Write exercise set 7, pages 59 - 60 (Objective 1)

Criterion Test 01-02-07-01

1. Find a replacement for n that makes each sentence true. (Solve)

(A) $2 + n = 6$	(B) $5 + n = 9$	(C) $4 + n = 5$
(D) $n + 5 = 7$	(E) $n + 6 = 9$	(F) $n + 3 = 10$
(G) $12 + 8 = n$	(H) $7 + 7 = n$	(I) $14 + 5 = n$

Criterion Test 01-02-07-02

1. Find a replacement for n which makes each sentence true. (Solve)

(A) $7 + n = 12$	(B) $5 + n = 14$	(C) $6 + n = 10$
(D) $n + 5 = 15$	(E) $n + 7 = 21$	(F) $n + 14 = 21$
(G) $8 + 6 = n$	(H) $9 + 8 = n$	(I) $6 + 7 = n$

Criterion Test 01-02-07-03

1. Find a replacement for n which makes each sentence true. (Solve)

(A) $8 + n = 10$	(B) $9 + n = 18$	(C) $4 + n = 14$
(D) $n + 5 = 10$	(E) $n + 7 = 10$	(F) $n + 8 = 12$
(G) $14 + 5 = n$	(H) $17 + 10 = n$	(I) $5 + 9 = n$

Answers to Criterion Tests

Test 01-02-07-01

1. (A) 4 (B) 4 (C) 1 (D) 2

   (E) 3 (F) 7 (G) 20 (H) 14 (I) 19

Test 01-02-07-02

1. (A) 5 (B) 9 (C) 4 (D) 10

   (E) 14 (F) 7 (G) 14 (H) 17 (I) 13

Test 01-02-07-03

1. (A) 2 (B) 9 (C) 10 (D) 5

   (E) 3 (F) 4 (G) 19 (H) 27 (I) 14

I. U. # 01-02-08

Basic Subtraction

OBJECTIVES:

1. Given an addition sentence, write two related subtraction sentences (except in cases like 4 + 4 = 8, where there is only one).

2. Given a subtraction sentence write two related addition sentences (except in cases like 6 - 3 = 3 where there is only one).

3. Given a subtraction problem such as 5 - 3 or 13 - 8, write the difference.

ACTIVITIES:

1. Study page 36, AAMA, and do margin exercises 81 - 82. (Objective 1)

2. Study page 36 and do margin exercises 83 - 85 (Objective 2)

3. Study page 37, and do margin exercises 87 - 95 (Objective 3)

4. Write exercise set 8, pages 61 - 62 (Objectives 1, 2, 3)

Criterion Test 01-02-08-01

1. For each sentence, write two related subtraction sentences.

   (A) $2 + 4 = 6$ (B) $3 + 5 = 8$ (C) $12 + 4 = 16$

2. For each sentence, write two related addition sentences.

   (A) $16 - 7 = 9$ (B) $12 - 4 = 8$ (C) $10 - n = 6$

3. Find the difference.

   (A) $16 - 7$ (B) $14 - 5$ (C) $13 - 9$

Criterion Test 01-02-08-02

1. For each sentence, write two related subtraction sentences.

   (A) $2 + 5 = 7$ (B) $7 + 6 = 13$ (C) $5 + 9 = 14$

2. For each sentence, write two related addition sentences.

   (A) $10 - n = 4$ (B) $14 - n = 4$ (C) $15 - n = 6$

3. Find the difference.

   (A) $17 - 8$ (B) $12 - 9$ (C) $15 - 7$

Criterion Test 01-02-08-03

1. For each sentence, write two related subtraction sentences.

   (A) $5 + 4 = 9$ (B) $7 + 4 = 11$ (C) $8 + 9 = 17$

2. For each sentence, write two related addition sentences.

   (A) $15 - 9 = 6$ (B) $12 - 4 = 8$ (C) $13 - 6 = 7$

3. Find the difference.

   (A) $9 - 4$ (B) $14 - 5$ (C) $16 - 9$

Answers to Criterion Tests

Test 01-02-08-01

1. (A) $6 - 4 = 2$, $6 - 2 = 4$ (B) $8 - 5 = 3$, $8 - 3 = 5$ (C) $16 - 12 = 4$, $16 - 4 = 12$

2. (A) $16 = 7 + 9$, $16 = 9 + 7$ (B) $12 = 8 + 4$, $12 = 4 + 8$ (C) $10 = n + 6$, $10 = 6 + n$

3. (A) 9 (B) 9 (C) 4

Test 01-02-08-02

1. (A) $7 - 5 = 2$, $7 - 2 = 5$ (B) $13 - 7 = 6$, $13 - 6 = 7$ (C) $14 - 9 = 5$, $14 - 5 = 9$

2. (A) $10 = 4 + n$, $10 = n + 4$ (B) $14 = n + 4$, $14 = 4 + n$ (C) $15 = n + 6$, $15 = 6 + n$

3. (A) 9 (B) 3 (C) 8

Test 01-02-08-03

1. (A) $9 - 5 = 4$, $9 - 4 = 5$ (B) $11 - 4 = 7$, $11 - 7 = 4$ (C) $17 - 9 = 8$, $17 - 8 = 9$

2. (A) $15 = 9 + 6$, $15 = 6 + 9$ (B) $12 = 8 + 4$, $12 = 4 + 8$ (C) $13 = 6 + 7$, $13 = 7 + 6$

3. (A) 5 (B) 9 (C) 7

I. U. # 01-02-09

Subtraction

(No Renaming)

You will need to recall:

1. How to write a standard numeral like 5287 in expanded form like 5000 + 200 + 80 + 7.

2. That in addition we add the ones digits together, the tens together, the hundreds together, and so on.

OBJECTIVES

1. Given two numbers write them in expanded form and write their difference. (No renaming necessary).

2. Given two numbers, write their difference. (No renaming necessary).

ACTIVITIES

1. Study page 38 in AAMA, and do the margin exercises 96, 97 (Objective 1)

2. Study page 38, and do margin exercises 98, 99 (Objective 2).

3. Write exercise set 9, pages 63 - 64 (Objective 2)

Criterion Test 01-02-09-01

1. Write the following standard numerals in expanded form and find the difference.

(A) 5769 − 2543

(B) 4783 − 3452

2. Find the difference.

(A) 7525 − 4321

(B) 5875 − 2345

(C) 4755 − 3421

Criterion Test 01-02-09-02

1. Write the following numerals in expanded form and find their difference.

(A) 7896 − 4355

(B) 6987 − 5346

2. Find the difference.

(A) 5280 − 4140

(B) 7329 − 6228

(C) 8976 − 7865

Criterion Test 01-02-09-03

1. Write in expanded form then subtract.

(A) 6789 − 1234

(B) 6543 − 1231

2. Find the difference.

(A) 3498 − 2244

(B) 7654 − 2244

(C) 2579 − 1322

Answers to Criterion Tests

Test 01-02-09-01

1. (A) $5000 + 700 + 60 + 9$
$2000 + 500 + 40 + 3$
$3000 + 200 + 20 + 6$

(B) $4000 + 700 + 80 + 3$
$3000 + 400 + 50 + 2$
$1000 + 300 + 30 + 1$

2. (A) 3204 (B) 3530 (C) 1334

Test 01-02-09-02

1. (A) $7000 + 800 + 90 + 6$
$4000 + 300 + 50 + 5$
$3000 + 500 + 40 + 1$

(B) $6000 + 900 + 80 + 7$
$5000 + 300 + 40 + 6$
$1000 + 600 + 40 + 1$

2. (A) 1140 (B) 1101 (C) 1111

Test 01-02-09-03

1. (A) $6000 + 700 + 80 + 9$
$1000 + 200 + 30 + 4$
$5000 + 500 + 50 + 5$

(B) $6000 + 500 + 40 + 3$
$1000 + 200 + 30 + 1$
$5000 + 300 + 10 + 2$

2. (A) 1254 (B) 5410 (C) 1257

I. U. # 01-02-10

Subtraction (With Renaming)

You will need to recall:

1. How to write a standard numeral such as 5282 in expanded form like 5000 + 200 + 80 + 2.

OBJECTIVES:

1. Given an equation like n = 67 - 59 or n + 59 = 67, write its solution.

2. Given two whole numbers, find their difference, renaming if necessary.

ACTIVITIES:

1. Study pages 39 - 41, AAMA, and do margin exercises 100 - 107 (Objective 2)

2. Study page 41 and do margin exercises 108 - 111. (Objective 2)

3. Write exercise set 10 pages 65 - 66 (Objectives 1, 2)

Criterion Test 01-02-10-01

1. Find the difference

(A)	(B)	(C)
6769	6431	7654
2367	2876	1765

2. Solve:

(A) n = 45 - 19
(B) n + 87 = 103
(B) n - 23 = 65

Criterion Test 01-02-10-02

1. Find the difference

(A)	(B)	(C)
5432	3421	9321
1789	1234	7654

2. Solve:

(A) n = 27 - 9
(B) n + 45 = 54
(C) n - 14 = 50

Criterion Test 01-02-10-03

1. Find the difference

(A)	(B)	(C)
3974	2654	4591
2895	1876	1999

2. Solve:

(A) 48 - 24 = n
(B) 48 - n = 24
(C) n + 24 = 48

Answers to Criterion Tests

Test 01-02-10-01

1.	(A) 4402	(B) 3555	(C) 5889
2.	(A) 26	(B) 16	(C) 88

Test 01-02-10-02

1.	(A) 3643	(B) 2187	(C) 1667
2.	(A) 18	(B) 9	(C) 64

Test 01-02-10-03

1.	(A) 1079	(B) 778	(C) 2592
2.	(A) 24	(B) 24	(C) 24

I. U. # 01-02-11

Number Sentences

and

Applied Problems

You will need to recall:

1. How to solve equations.

OBJECTIVES:

1. Given an applied problem, translate it into a number sentence and solve it.

ACTIVITIES:

1. Study pages 42 - 43 in AAMA, and do the margin exercises 112 - 116 (Objective 1).

2. Write Exercise Set 11, page 67 - 68 (Objective 1)

Criterion Test 01-02-11-01

1. Translate into a number sentence. Do not solve.

   (A) John Smith spent $25.00 for a jacket and had $15.00 left. How much did he have to begin with?

   (B) Joe Blow was born in 1922. How old was he in 1972?

   (C) B. G. Spender wrote checks for $15.00 and for $35.00. His bank balance before writing the checks was $60.00. How much did he have left?

2. Parts A, B, C, - solve the number sentences which you wrote for question 1 parts A, B, and C.

Criterion Test 01-02-11-02

1. Translate into a number sentence. Do not solve.

   (A) Jack Armstrong is reading a book containing 549 pages. He has read 237 pages. How many pages has he left to read?

   (B) Chuck Rippey has changed jobs. His old salary was $12,000.00 a year. His new salary is $15,500.00 per year. How much was his increase in pay?

   (C) Attendance at the Arnold-Calloway football game this year was 523 people. Last year the attendance was 645. How much smaller was this year's attendance?

2. Parts A, B, C, - solve the number sentences written for problem 1 parts A, B, and C.

Criterion Test 01-02-11-03

1. Translate into a number sentence. Do not solve.

   (A) Jimmy the Greek lost a $50.00 bet that Callaway would beat Arnold in volleyball. He had $75.00 before losing. How much did he have after paying the bet?

   (B) Will Itblast wanted to make a bomb. He needed 525 lbs. of T.N.T. He only had 350 lbs. How much more did he need?

   (C) Miss Ligemdotty wanted to write a 500 question test. She fell asleep after writing the 343rd question. How many questions has she left to write?

2. Parts A, B, C, - solve the number sentences written for problem 1 parts A, B, and C.

Answers to Criterion Tests

Test 01-02-11-01

1. (A) $n - 25 = 15$ or $25 + 15 = n$ (B) $1972 - 1922 = n$ or $1972 - n = 1922$

   (C) $60 - (15 + 35) = n$ or $n + (15 + 35) = 60$

2. (A) $40.00 (B) 50 years (C) $10.00

Test 01-02-11-02

1. (A) $549 - 237 = n$ or $n + 237 = 549$ (B) $15,500 - 12,000 = n$ or $n + 12,000 = 15,500$

   (C) $645 - 523 = n$ or $n + 523 = 645$

2. (A) 312 (B) 3,500 (C) 122

Test 01-02-11-03

1. (A) $75 - 50 = n$ or $n + 50 = 75$ (B) $525 - 350 = n$ or $n + 350 = 525$

   (C) $500 - 343 = n$ or $n + 343 = 500$

2. (A) 25 (B) 175 (C) 157

I. U. # 01-02-12

Zeros in Subtraction

You will need to recall:

1. How to write standard numerals in expanded form.

2. How to rename numerals in subtraction problems.

OBJECTIVES:

1. Give a subtraction problem in which zeros occur as digits, write the difference.

ACTIVITIES:

1. Study pages 44 - 45, AAMA and do margin exercises 118 - 131 (Objective 1).

2. Write exercise set 12 page 69 - 70 (Objective 1).

Criterion Test 01-02-12-01

1. Find the difference.

(A) $\begin{array}{r} 40 \\ \underline{34} \end{array}$ (B) $\begin{array}{r} 405 \\ \underline{174} \end{array}$ (C) $\begin{array}{r} 306 \\ \underline{257} \end{array}$ (D) $\begin{array}{r} 49 \\ \underline{30} \end{array}$

(E) $\begin{array}{r} 409 \\ \underline{300} \end{array}$ (F) $\begin{array}{r} 1723 \\ \underline{1005} \end{array}$

Criterion Test 01-02-12-02

1. Find the difference.

(A) $\begin{array}{r} 50 \\ \underline{38} \end{array}$ (B) $\begin{array}{r} 505 \\ \underline{333} \end{array}$ (C) $\begin{array}{r} 505 \\ \underline{258} \end{array}$ (D) $\begin{array}{r} 474 \\ \underline{230} \end{array}$

(E) $\begin{array}{r} 298 \\ \underline{103} \end{array}$ (F) $\begin{array}{r} 9723 \\ \underline{3005} \end{array}$

Criterion Test 01-02-12-03

1. Find the difference.

(A) $\begin{array}{r} 90 \\ \underline{47} \end{array}$ (B) $\begin{array}{r} 209 \\ \underline{145} \end{array}$ (C) $\begin{array}{r} 306 \\ \underline{127} \end{array}$ (D) $\begin{array}{r} 48 \\ \underline{20} \end{array}$

(E) $\begin{array}{r} 498 \\ \underline{209} \end{array}$ (F) $\begin{array}{r} 5283 \\ \underline{4007} \end{array}$

Answers to Criterion Tests

Test 01-02-12-01

1. (A) 6 (B) 231 (C) 49 (D) 19

   (E) 109 (F) 718

Test 01-02-12-02

1. (A) 12 (B) 172 (C) 247 (D) 244

   (E) 195 (F) 6718

Test 01-02-12-03

1. (A) 43 (B) 64 (C) 179 (D) 28

   (E) 289 (F) 1276

The End of Package 01-02